Amendments to the Claims

Please amend the claims as follows:

1. (currently amended) A machine for CNC-controlled machining~~, particularly generating cutting or generating grinding,~~ of spiral bevel gears with and without hypoid offset, said machine comprising:

~~having~~ a work gear spindle for rotatably mounting a work gear;

a tool spindle for rotatably mounting a tool; and

means for relative movement of the work gear spindle and the tool spindle in up to three different directions (X, Y, Z),

wherein a first spindle of the work gear spindle and the tool spindle forms a ~~for all bevel gears to be machined on the machine a fixed, non-adjustable~~ tilt angle (K) against an orientation axis (O), wherein the tilt angle is non-adjustably fixed for all possible machining operations of said machine, and wherein the first spindle is adapted to be continuously swiveled about the orientation axis (O) by a rotatable swivel device, and the second spindle, forming a reference plane with its axis (W or T) and the orientation axis (O), is, for a bevel gear to be machined on the ~~machine~~ machine, adjustable in its angular position about a pivot axis (P) which pivot axis is perpendicular to the reference plane, but the second spindle does not change its angular position during the machining operation,

wherein the tilt angle (K) and the angular position are selected such that a predetermined relative rolling motion between the work gear and the tool can be achieved.

2. (currently amended) The machine according to claim 1, wherein the swivel device has a swivel drum capable of rotation about the orientation axis (O), with the ~~swiveling~~ first spindle being rotatably mounted on or in said drum.

3. (currently amended) The machine according to claim ~~2, wherein~~ 2 further comprising rotation means for ~~rotating, particularly non-linearly rotating,~~ rotating the swivel drum, said rotation means being configured for at least one of linear rotation and non-linear rotation of the swivel drum.

4. (original) The machine according to claim 2, wherein at least two of the three directions (X, Y, Z) are mutually orthogonal.

5. (original) The machine according to claim 4, wherein the third direction (Z) is inclined with respect to one of the two or to both orthogonal directions.

6. (currently amended) The machine according to claim 2, wherein the tilt angle (K) is at least equal ~~to the~~ to a maximum value ($\Delta\Gamma max$) of all ~~maximum~~ machine root angle pivoting ranges occurring during machining of all possible bevel gears on a ~~conventional 6-axis machine~~ 6-axis gear machining device that utilizes three translational axes and three rotational axes which are simultaneously controlled during machining.

7. (original) The machine according to claim 6, wherein the angular position of the second spindle is measured against a coordinate axis (Y) which coordinate axis is in the reference plane and is perpendicular to the orientation axis (O), said angular position being designated as the machine root angle (Γ).

8. (currently amended) The machine according to claim 7, wherein a machine root angle (Γ) which is to be adjusted, corresponds to an angle equal to the maximum machine root angle (Γmax) resulting from a bevel gear to be machined on said 6-axis gear machining device ~~a conventional 6-axis machine~~, minus the tilt angle (K).

9. (currently amended) The machine according to claim 6, wherein the tilt angle (K) lies within a range of greater than 0° and up to 35°~~, and preferably from 5° to 15°, and is preferably 10°~~.

10. (original) The machine according to claim 2, wherein the first spindle of the work gear spindle and the tool spindle is rotatably mounted in a first spindle support which is capable of being pivoted about the pivot axis (P) which pivot axis is perpendicular to the reference plane, and which first spindle support is displaceable in one of the three directions, and the second spindle - together with the swivel drum in which it is rotatably mounted – is rotatably mounted in a second spindle support which is displaceable in one of the other two directions, said second spindle being displaceably guided in the third direction.

11. (original) The machine according to claim 10, wherein both spindle supports are guided horizontally.

12. (original) The machine according to claim 10, wherein the first spindle support is guided horizontally and the second spindle support is guided with respect to height.

13. (original) The machine according to claim 11, wherein the second spindle support has a first carriage guided horizontally and a second carriage which is guided on said first carriage with respect to height and on which the swivel drum is rotatably mounted.

14. (original) The machine according to claim 12, wherein the second spindle support has a first carriage guided with respect to height and a second carriage which is horizontally guided on said first carriage and on which the swivel drum is rotatably mounted.

15. (original) The machine according to claim 11, wherein the horizontal guides are each provided on a horizontal machine base.

16. (original) The machine according to claim 12, wherein the horizontal guidance of the first spindle support and the guidance in height of the second spindle support are provided on an inclined or a vertical machine base.

17. (original) The machine according to claim 10, wherein the work gear spindle and the tool spindle are arranged in such a manner that during machining, the work gear and the tool engage at a location substantially above a region of the machine free of horizontal guides, and that a chip collector into which chips will fall substantially by gravity, is or can be provided in said region.

18. (original) The machine according to claim 13, wherein the direction (Z) in which the swivel drum can be moved height-wise with its associated carriage, is inclined against the vertical.

19. (original) The machine according to claim 2, wherein the tool spindle is rotatably mounted in the swivel drum.

20. (original) The machine according to claim 19, wherein a built-in spindle motor for the tool spindle is provided in the swivel drum.

21. (original) The machine according to claim 2, wherein a driving motor for the tool spindle is provided externally of the swivel drum and is connected to the tool spindle via an angular gear.

22. (currently amended) A method for the CNC-controlled machining~~, particularly generating cutting or generating grinding,~~ of spiral bevel gears with and without hypoid offset, comprising the following steps:

rotatably mounting a work gear by a work gear spindle;

rotatably mounting a tool by a tool spindle;

relatively moving of the work gear spindle and of the tool spindle in up to three different directions (X, Y, Z);

adjusting the work gear spindle or the tool spindle that forms a reference plane with its axis and an orientation axis (O), in its angular position about a pivot axis (P) which pivot axis is perpendicular to the reference plane, corresponding to a bevel gear to be machined on the machine, and maintaining this angular position throughout the machining operation; and

continuously swiveling the other spindle about the orientation axis (O) at a tilt angle (K) against the orientation axis (O) ~~which tilt angle is fixed and non-adjustable for all bevel gears to be machined on the machine~~, wherein the tilt angle is non-adjustably fixed for all possible machining operations of said machine;

wherein the angular position and the tilt angle (K) are selected such that a predetermined relative rolling motion between the work gear and the tool is achieved by the continuous swiveling.

23. (currently amended) The method according to claim 22, wherein the tilt angle (K) is selected at least equal ~~to the~~ to a maximum value ($\Delta\Gamma max$) of all ~~maximum~~ machine root angle pivoting ranges occurring during machining of all possible bevel gears on a ~~conventional 6-axis machine~~ 6-axis gear machining device that utilizes three translational axes and three rotational axes which are simultaneously controlled during machining.

24. (currently amended) The method according to claim ~~22,~~ 23, wherein an angle is calculated for the machine root angle (Γ) to be adjusted that is equal to the maximum machine root angle (Γmax) resulting from a bevel gear to be machined on said 6-axis gear machining device ~~a conventional 6-axis machine~~, minus the tilt angle (K).

25. (original) The method according to claim 22, wherein to achieve the predetermined rolling motion the continuous swiveling of the other spindle is non-uniform.